



BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Pepperell

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

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BioMap and Living Waters:

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* Depending on the location of Core Habitats, your city or town may not have all of these sections.

Spring Salamander
(*Gyrinophilus porphyriticus*)
Species of Special Concern



Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.



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Introduction

In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generations to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, **BioMap** and **Living Waters**. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate **Core Habitats** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.



Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the **riparian areas**, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as **Supporting Natural Landscape** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, **Critical Supporting Watersheds** highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

| BioMap | | |
|-----------------------------|--|-----------------------------|
| Biodiversity Group | Species and Verified Natural Community Types | |
| | Included in BioMap | Total Statewide |
| Vascular Plants | 246 | 1,538 |
| Birds | 21 | 221 breeding species |
| Reptiles | 11 | 25 |
| Amphibians | 6 | 21 |
| Mammals | 4 | 85 |
| Moths and Butterflies | 52 | An estimated 2,500 to 3,000 |
| Damselflies and Dragonflies | 25 | An estimated 165 |
| Beetles | 10 | An estimated 2,500 to 4,000 |
| Natural Communities | 92 | > 105 community types |
| Living Waters | | |
| Biodiversity Group | Species | |
| | Included in Living Waters | Total Statewide |
| Aquatic Vascular Plants | 23 | 114 |
| Fishes | 11 | 57 |
| Mussels | 7 | 12 |
| Aquatic Invertebrates | 23 | An estimated > 2500 |

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- **Endangered** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- **Threatened** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial **watch list** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The **Massachusetts Natural Heritage Atlas** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- **Critically Imperiled** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- **Imperiled** communities typically have 6-20 sites or few remaining acres in the state.
- **Vulnerable** communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone 508-792-7270, Ext. 200

by Fax: 508-792-7821

by Email: natural.heritage@state.ma.us.

by Mail: North Drive
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
 - * Field guides
 - * Natural Heritage Atlas, and more!



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BioMap: Species and Natural Communities

Pepperell

Core Habitat BM100

Invertebrates

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|--------------------|------------------------|-----------------|
| Spatterdock Darner | <i>Aeshna mutata</i> | Special Concern |

Vertebrates

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|--------------------|-----------------------------|-----------------|
| Blanding's Turtle | <i>Emydoidea blandingii</i> | Threatened |
| Marbled Salamander | <i>Ambystoma opacum</i> | Threatened |
| Wood Turtle | <i>Clemmys insculpta</i> | Special Concern |

Core Habitat BM127

Natural Communities

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|----------------------|------------------------|---------------|
| Acidic Graminoid Fen | | Vulnerable |

Plants

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|--------------------|-----------------------------|---------------|
| Low Bindweed | <i>Calystegia spithamea</i> | Endangered |

Vertebrates

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|-------------------------|-----------------------------|-----------------|
| Blanding's Turtle | <i>Emydoidea blandingii</i> | Threatened |
| Blue-spotted Salamander | <i>Ambystoma laterale</i> | Special Concern |
| Spotted Turtle | <i>Clemmys guttata</i> | Special Concern |
| Wood Turtle | <i>Clemmys insculpta</i> | Special Concern |

Core Habitat BM197

Natural Communities

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|-------------------------------------|------------------------|---------------|
| Circumneutral Talus Forest/Woodland | | Vulnerable |



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BioMap: Species and Natural Communities

Pepperell

Plants

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|---------------------------|------------------------|---------------|
| Small Site for Rare Plant | | |

Core Habitat BM234

Natural Communities

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|-------------------------------------|------------------------|---------------|
| Circumneutral Talus Forest/Woodland | | Vulnerable |

Invertebrates

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|--------------------|------------------------|-----------------|
| Spatterdock Darner | <i>Aeshna mutata</i> | Special Concern |

Core Habitat BM256

Plants

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|--------------------|--------------------------|-----------------|
| Climbing Fern | <i>Lygodium palmatum</i> | Special Concern |

Invertebrates

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|--------------------|------------------------------|-----------------|
| Brook Snaketail | <i>Ophiogomphus aspersus</i> | Special Concern |
| Spatterdock Darner | <i>Aeshna mutata</i> | Special Concern |
| Zebra Clubtail | <i>Stylurus scudderii</i> | Endangered |

Vertebrates

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|-------------------------|-------------------------------|-----------------|
| Blanding's Turtle | <i>Emydoidea blandingii</i> | Threatened |
| Blue-spotted Salamander | <i>Ambystoma laterale</i> | Special Concern |
| Four-toed Salamander | <i>Hemidactylium scutatum</i> | Special Concern |
| Spotted Turtle | <i>Clemmys guttata</i> | Special Concern |
| Wood Turtle | <i>Clemmys insculpta</i> | Special Concern |



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BioMap: Species and Natural Communities

Pepperell

Core Habitat BM317

Vertebrates

Common Name

Scientific Name

Status

Blanding's Turtle

Emydoidea blandingii

Threatened



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BioMap: Core Habitat Summaries

Pepperell

Core Habitat BM100

This Core Habitat encompasses a long river corridor, including portions of the Nashua and Nissitissit Rivers, and forested uplands to the west. With its meandering streams, diverse riparian wetlands, emergent wetlands, small wet meadows, forested and shrub swamps, and upland forests and fields, this area provides key habitats for rare turtles and salamanders, as well as several rare dragonflies. While portions of this Core Habitat are protected as conservation land, additional conservation priorities include further protection of the land immediately adjacent to the Nissitissit and Nashua Rivers and their tributaries, protection of the vernal pools and surrounding uplands, and minimizing road mortality of rare turtles by curbing new road construction throughout the area.

Invertebrates

This large and minimally fragmented complex of streams, ponds, and other wetlands in the vicinity of Stewart Brook and Gulf Brook in the northwest corner of Pepperell is important habitat for rare dragonflies such as the Spatterdock Darner. Most of the habitat appears to be unprotected. Other rare dragonflies that may inhabit this area include the Brook Snaketail and the Zebra Clubtail. This Core Habitat is in close proximity to Core Habitats along the Squannacook River in Townsend and along the Squannacook River in Shirley and Groton, which allows for dispersal of dragonflies between these sites.

Vertebrates

This Core Habitat contains significant habitat for Wood and Blanding's Turtles along the floodplain of the Nissitissit and Nashua Rivers and in adjacent uplands and associated wetlands. The western portion of this Core Habitat contains Marbled Salamander habitat in the vicinity of Stewart Brook in Pepperell and in the numerous vernal pools of the area. This area may support the northernmost population of this species in Massachusetts.

Core Habitat BM127

This large Core Habitat connects blocks of undeveloped lands and several brooks, including Unkety, Salmon, Joint Grass, and Reedy Meadow Brooks in Dunstable and Groton. This area provides important habitat for three species of state-listed rare turtles. It also represents an excellent opportunity for the long-term preservation of Blue-spotted Salamanders, especially at several locations where multiple vernal pools and wooded swamps are present. Other highlights in the Core Habitat include a good example of a Water-willow-dominated Acidic Graminoid Fen community, as well as a population of the Endangered Low Bindweed. This Core Habitat should be a high priority for further protection.

Natural Communities

In Dunstable, this Core Habitat contains a good example of a Water-willow-dominated Acidic Graminoid Fen community. Acidic Graminoid Fens are acidic peatlands that experience some groundwater and/or surface water flow but no calcareous seepage. Standing water is often present throughout much of the growing season.

Plants

This area contains one of only three populations of the Endangered Low Bindweed in the state. Low Bindweed is a short, upright vine with large white or pink flowers.



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BioMap: Core Habitat Summaries

Pepperell

Vertebrates

This Core Habitat contains a diverse mix of fresh marsh, wet meadows, wooded and shrub swamps, forested uplands, scattered small fields, and many Certified and Potential Vernal Pools. These areas include important habitats for Blanding's, Spotted, and Wood Turtles, as well as for Blue-spotted Salamanders. Unkety Brook and its associated wetlands and uplands support a significant population of Blanding's Turtles. Habitats here may also be used by Wood Turtles. Spotted Turtle populations may be widely distributed throughout this Core Habitat. Protection of undeveloped habitats may also represent an excellent opportunity for the long-term preservation of Blue-spotted Salamander populations, especially at several locations where multiple vernal pools and wooded swamps are present. This Core Habitat should be a high priority area for preserve design planning and further habitat protection.

Core Habitat BM197

Natural Communities

This Core Habitat contains a small, yet diverse, Circumneutral Talus Forest with minimal disturbances that is embedded within a large area of naturally forested land. Circumneutral Talus Forest communities develop on boulder strewn slopes below certain cliffs, with scattered trees, shrubs, vines, and ferns. There is often a gradient of vegetation density as the slope changes, with more trees on the lower slope.

Core Habitat BM234

Natural Communities

This Core Habitat contains a small, yet diverse, Circumneutral Talus Forest with minimal disturbances that is embedded within a large area of naturally forested land. Circumneutral Talus Forest communities develop on boulder strewn slopes below certain cliffs, with scattered trees, shrubs, vines, and ferns. There is often a gradient of vegetation density as the slope changes, with more trees on the lower slope.

Invertebrates

This Core Habitat includes a pond and other wetlands in the vicinity of Shipley Hill in Pepperell that provide unfragmented habitat for the Spatterdock Darner dragonfly. Apparently most of this habitat is unprotected. This Core Habitat is in close proximity to Core Habitat along the Squannacook River in Townsend, Core Habitat in the vicinity of Stewart Brook and Gulf Brook in Pepperell, and Core Habitat along the Squannacook River in Shirley and Groton, which allows for dispersal of dragonflies between all these sites.



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BioMap: Core Habitat Summaries

Pepperell

Core Habitat BM256

This Core Habitat encompasses important habitats for several rare species of turtles and salamanders along the Nashua and Squannacook Rivers. It is also home to many dragonflies, including the Endangered Spatterdock Darner and Zebra Clubtail, as well as the unusual Climbing Fern. Further conservation efforts should seek to connect currently protected yet disjunct tracts of land.

Plants

This Core Habitat supports a very large occurrence of the Climbing Fern, one of the more unusual-looking fern species in Massachusetts.

Invertebrates

This Core Habitat includes a 6-km stretch of the Squannacook River in Townsend, Shirley, and Groton, that along with associated smaller streams and ponds is important habitat for rare dragonflies such as the Spatterdock Darner, the Zebra Clubtail (known to occur here for over 30 years), and the Brook Snaketail (known to occur here for over 65 years). While much of the habitat is protected within the bounds of the Squannacook River Wildlife Management Area, conservation of currently unprotected lands within this Core Habitat is desirable to increase the amount of contiguous protected habitat and decrease its fragmentation, thus helping to ensure the long-term viability of the rare species inhabiting the area. This Core Habitat is in close proximity to the Core Habitat along the Squannacook River in Townsend, and the Core Habitat in the vicinity of Stewart Brook and Gulf Brook in Pepperell, which allows for dispersal of dragonflies between these sites.

Vertebrates

The floodplains of the Squannacook and Nashua Rivers and adjacent wetlands and uplands provide important habitat for Blanding's and Wood Turtles, especially in areas with meandering channels, wetlands, and small pools created by old river oxbows, and in adjacent forests and fields. These mosaics of habitats also provide significant habitat for Spotted Turtles, Blue-spotted Salamanders, and Four-toed Salamanders, especially in shallow wetlands, wooded swamps, seasonal pools, and adjacent forested uplands. Protection efforts should seek to establish unbroken riparian corridors along both rivers and their floodplains.

Core Habitat BM317

Vertebrates

The forests, small scattered wetlands, and vernal pools surrounding Throne Hill in Groton and Pepperell help support one of the largest populations of Blanding's Turtles remaining in the northeastern United States. Recent studies have demonstrated that there is a significant population of Blanding's Turtles here, and that it uses nearly the entire extent of this Core Habitat. This block of habitat helps maintain the integrity and connectivity of the more extensive populations of Blanding's Turtles associated with the Squannacook River to the southwest and the Nashua River to the south and east. This area also contains habitat for Spotted Turtles and Four-toed Salamanders as well. A portion of the southern half of this Core Habitat is already protected as conservation land.



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Living Waters: Species and Habitats

Pepperell

Core Habitat LW213

Invertebrates

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|--------------------|------------------------|---------------|
|--------------------|------------------------|---------------|

| | | |
|---------------|-----------------------------|------------|
| Brook Floater | <i>Alasmidonta varicosa</i> | Endangered |
|---------------|-----------------------------|------------|

Core Habitat LW311

Exemplary Habitats

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|--------------------|------------------------|---------------|
|--------------------|------------------------|---------------|

| | | |
|--------------|--|-------|
| Fish Habitat | | ----- |
|--------------|--|-------|

| | | |
|----------------------|--|-------|
| Invertebrate Habitat | | ----- |
|----------------------|--|-------|

Invertebrates

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|--------------------|------------------------|---------------|
|--------------------|------------------------|---------------|

| | | |
|---------------|-----------------------------|------------|
| Brook Floater | <i>Alasmidonta varicosa</i> | Endangered |
|---------------|-----------------------------|------------|

| | | |
|--------------------|------------------------------------|-------|
| Eastern Pearlshell | <i>Margaritifera margaritifera</i> | ----- |
|--------------------|------------------------------------|-------|

Fishes

| <u>Common Name</u> | <u>Scientific Name</u> | <u>Status</u> |
|--------------------|------------------------|---------------|
|--------------------|------------------------|---------------|

| | | |
|---------------|----------------------------|-----------------|
| Bridle Shiner | <i>Notropis bifrenatus</i> | Special Concern |
|---------------|----------------------------|-----------------|



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Living Waters: Core Habitat Summaries

Pepperell

Core Habitat LW213

This section of the Nissitissit River is known to support the Endangered Brook Floater, a rare species of freshwater mussel. This species is found in moderately flowing stretches of the river, often below riffles, in coarse cobble and sand riverbeds. This mussel is sensitive to low oxygen, pollution, and silt, so further protection of the riparian areas adjacent to this Core Habitat will reduce the potentially negative impacts of nearby development.

Core Habitat LW311

The Nissitissit River supports a range of freshwater species with its combination of habitats that include rocky riffles, sandy river beds, as well as quiet, well-vegetated backwaters.

For example, in the Nissitissit River and up into Sucker Brook, there is a fish community dominated by Fallfish but also consisting of Blacknose Dace, Creek Chubsucker, Brook Trout, Longnose Dace, Tessellated Darter, and the rare Bridle Shiner. While Bridle Shiner and Creek Chubsucker are found in vegetated, quiet waters, Fallfish and the other species require moderate flows and rocky substrates. This occurrence of Bridle Shiner represents one of a few known populations of this fish species in the Nashua River Watershed. This Species of Special Concern has a small range from southern New England to South Carolina, and has been declining or extirpated in much of the region. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes.

The Nissitissit River also supports four freshwater mussel species, including the Endangered Brook Floater and the uncommon Eastern Pearlshell. Both of these species are found in moderately flowing stretches of the river, often below riffles, in coarse cobble and sand riverbeds. These species are sensitive to low oxygen, pollution, and silt, so further protection of the riparian areas adjacent to this Core Habitat will reduce the potentially negative impacts of nearby development.

The Nissitissit River and up into Mine Brook support habitats for rare dragonflies, and the area is considered to be one of the richest in regards to dragonfly diversity in the state. These aquatic insects are good indicators of ecosystem health, confirming that this Core Habitat contains high-quality freshwater habitats for other aquatic species as well.



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